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**Abstract of the Disclosure**

al 5 An x-ray diffraction apparatus and method are provided in which an x-ray or  
goniometer head can be adjusted in different directions to allow the head to direct x-rays  
at a part from various positions. In this manner, stress measurements can be taken from  
a wider region of the part without requiring that the part itself be moved or that an  
operator move the unit, which can be relatively heavy. Preferably, the apparatus is a  
portable unit including adjustment mounts to allow the x-ray head to be moved in the  
different directions so that it can be transported for use in the field at the site at which a  
part is located to allow for measurements to be taken from the part while it remains in  
10 service.

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